The Influence of ACFTA on Indonesia's Coal Exports to China from 2000-2022

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ARTICLE INFORMATION

ABSTRACT

Southeast Asia (ASEAN) and China formed the ASEAN-China Free Trade Area (ACFTA) agreement to realize free trade in the Southeast Asia region and China. ACFTA is an agreement that has been agreed by ASEAN member countries with China in an effort to create an international free trade area by minimizing barriers that could hinder tariff or non-tariff trade, increasing market access, regulations and investment agreements. This research aims to determine whether ACFTA has had an impact on increasing the performance of Indonesian coal exports to China before and after the establishment of ACFTA. This research uses secondary data sources from 2000-2021 which originate from the agency center Indonesian statistics. Purposive sampling was used in this research and the sample selected was based on certain criteria that describe the trade balance. Average volume of coal exports to China per year is 623,0273 with a median of 600,8000. The results show that the ASEAN-China Free Trade Area (ACFTA) has a positive impact on Indonesian coal exports to China.

Keywords: Coal, Export, ACFTA, ASEAN, Trade balance.

INTRODUCTION

Free trade and globalization have caused imported products to enter Indonesia quickly and in large quantities (Yulinda Nurul Aini, 2018). One of the agreements that has an influence on free trade is the ASEAN-China Free Trade Area (ACFTA). Indonesia has committed to and joined the ASEAN-China Free Trade Agreement (ACFTA) by ratifying the Framework Agreement on Comprehensive Economic Cooperation Between The Association of Southeast Asian Nations (ASEAN) and The People's Republic of China on June 15 2004 through Presidential Decree Number 48 of 2004. Through this agreement, imported products from ASEAN and China can enter Indonesia more easily and at lower costs due to the reduction and elimination of agreed tariffs.

Southeast Asia (ASEAN) and China formed the ASEAN-China Free Trade Area (ACFTA) agreement to realize free trade in the Southeast Asia region and China. ACFTA is an agreement agreed by ASEAN member countries with China to minimize trade barriers, both tariff and non-tariff, as well as increase market access, regulations and investment agreements (Suryadinata, 2019). In the context of globalization and international economic integration, ACFTA is a strategic step to strengthen economic relations between ASEAN and China, as well as expand trade opportunities for both parties (Li, 2020). According to international trade theory, agreements such as ACFTA can increase economic efficiency by exploiting the comparative advantages of each country (Krugman, 2018).

As one of the ASEAN member countries, Indonesia has a significant interest in this agreement. Coal is one of Indonesia's main export commodities which has an important role in the national economy. This commodity is not only a major source of foreign exchange, but also supports the domestic energy sector (Badan Pusat Statistik, 2021). With the existence of ACFTA, it is hoped that there will be increased market access for Indonesian coal in China, which is one of the largest consumers of coal in the world (Setiawan, 2022). Previous research shows that free trade agreements generally increase trade volume between participating countries (Wang & Cheong, 2020). However, specific analysis of the impact of ACFTA on Indonesian coal exports is still rarely carried out.

Since the implementation of ACFTA, Indonesian coal exports to China have shown fluctuations influenced by various factors. Trade policy, market demand, and changes in global commodity prices are some of the main factors that influence export performance (Wijaya & Hartono, 2023). Research by Zhang (2023) shows that despite increasing market access, competition from other coal exporting countries such as Australia and Russia remains a challenge. In addition, changes in energy policy in China, such as the emphasis on renewable energy, have also had a significant impact on the demand for imported coal (Chen, 2021). This shows that although free trade agreements open up opportunities, external factors still play an important role in determining the final outcome.

Although several studies have discussed the impact of ACFTA in general, studies that specifically examine the influence of ACFTA on Indonesian coal exports are still limited. Research by Wang and Cheong (2020) and Zhang (2023) has touched on aspects of free trade and coal market dynamics, but has not provided an in-depth analysis of how ACFTA specifically affects Indonesian coal exports. This research attempts to fill this gap with a more detailed analysis of the period before and after the implementation of ACFTA. Understanding the specific impacts of ACFTA is very important to help policy

makers and industry players formulate more effective strategies to increase competitiveness in international markets (Harahap, 2022).

This research aims to determine whether ACFTA has had an impact on increasing the performance of Indonesian coal exports to China before and after the implementation of this agreement. It is hoped that the results of this research will provide deeper insight into the dynamics of Indonesian coal trade and provide relevant policy recommendations to increase the competitiveness of this commodity's exports in international markets (Harahap, 2022). Furthermore, it is hoped that this research can fill existing research gaps, providing an empirical basis for more strategic trade policies within the ACFTA framework.

LITERATURE REVIEW

International trade theory, especially the theory of comparative advantage, states that countries will benefit from trade if they specialize in the production of goods in which they have a comparative advantage (Smith, 1776; Ricardo, 1817). In the context of ACFTA, this theory is relevant because it underlines the importance of eliminating tariff barriers to increase the efficiency and volume of trade between member countries (Krugman & Obstfeld, 2018). In addition, economic integration theory explains the process and benefits of economic cooperation between countries through the formation of free trade areas, customs unions, single markets, and other forms of integration. Paul Krugman (1991) states that economic integration can reduce trade barriers and increase the flow of goods, services and investment. In the case of ACFTA, this theory helps understand the impact of removing trade barriers between ASEAN and China. Michael Porter (1990) developed the theory of competitive advantage which emphasizes the strategy of companies and countries in creating and maintaining advantages in the global market. This theory is relevant to understanding how Indonesia can increase coal exports to China through increasing production efficiency and appropriate marketing strategies.

Previous research shows that ACFTA has succeeded in increasing trade volume between its member countries (Wang & Cheong, 2020; Zhang, 2023). ACFTA was formed with the aim of increasing trade and investment between ASEAN countries and China through eliminating or reducing tariffs and non-tariff barriers. Apart from that, ACFTA also provides economic benefits in the form of increased market access and investment. Previous research shows that ACFTA has a significant impact on Indonesian coal exports. Suryadinata (2019) found that after the implementation of ACFTA, the volume of Indonesian coal exports to China experienced a significant increase. Li (2020) also notes that lower tariff regulations and easier market access contributed to the increase. Research by Zhang (2023) shows that apart from trade regulations, price and demand factors from China also greatly influence Indonesia's coal exports.

This research states that ACFTA is believed to have a positive effect on increasing Indonesian coal exports to China. By reducing or eliminating tariffs and non-tariff barriers, ACFTA is expected to significantly increase the volume of Indonesian coal exports.

RESEARCH METHOD

One way to determine the type of research is based on the data used in the research. This type of research is quantitative. This research uses secondary daa sources. Secondary data is obtained from previous research documents or library sources that support the research. This research uses purposive sampling, where the sample selected is based on certain criteria that describe the trade balance. The data used is a time series and was only collected from 2000-2022. The sample used in the research started from 2000 because it was the year before the ACFTA (ASEAN-China Trade Area) occurred. The data source was obtained from the Indonesian Central Statistics Agency. The Variables used in the research include the dependent variable, the volume of Indonesian coal exports (Y), and the independent variable, China's coal consumption (X).

Because our focus is on the impact before and after ACFTA (ASEAN-China Trade Area), we chose samples from 2000-2022. To ensure conditions before ACFTA (ASEAN-China Trade Area) we use samples from 2011-2021. The sample was was selected based on data for 22 years. Research findings show the positive impact of ACFTA (ASEAN-China Trade Area) on Indonesian coal exports to China. The model spesification in this research uses a paired sample t-test. In the paired test, two tratments will be given in one saample, which is a quantitative data sample that must be homogeneous and normally distributed. The research model is a follows:
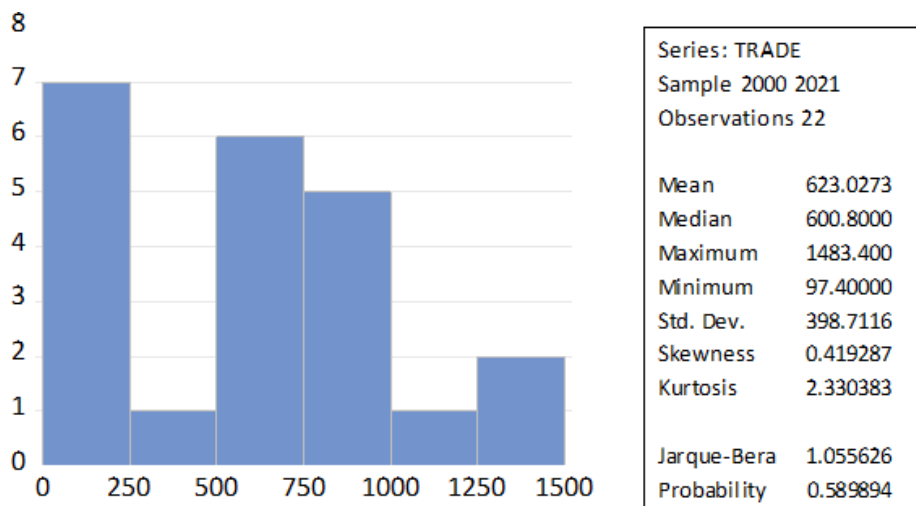
$$t_{hit} = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$$

t = calculated t value
x = sample rate
h = parameter value
s = sample standard deviation
n = number of samples

RESULTS

In Table 1, a data set consisting of 22 observation reveals varoius values at various levels of key indicators.

Table 1. Indonesia-China Petroleum Export Value

Series: TRADE	
Sample 2000 2021	
Observations 22	
Mean	623.0273
Median	600.8000
Maximum	1483.400
Minimum	97.40000
Std. Dev.	398.7116
Skewness	0.419287
Kurtosis	2.330383
Jarque-Bera	1.055626
Probability	0.589894

Specifically, it shows that the average volume of coal exports per year is 623,0273 with a median of 600,8000. The highest export volume recorded during the period was 1483,400 while the lowest export volume recorded during the period was 97,40000. The standard deviation of the data is 398.7116, indicating how far the variation or spread of the data is from the average. A skewness value of 0.419287 indicates that the data distribution is slightly skewed to the right (positive). This means that there are some export values that are very high compared to other values.

Overall, data on Indonesian coal exports to China from 2000 to 2021 shows quite large variations, with annual export volumes varying from 97,40,000 to 1483,400 units. The data distribution tends to be slightly right-skewed with some years showing very high export volumes. Although there are variations, the data distribution is relatively normal, as shown by the results of the Jarque-Bera test.

Table 2. t-test, Satterthwaite-Welch t-test, Anova F-test, and Welch F-test

Method	df	Value	Probability
t-test	20	4.749603	0.0001
Satterthwaite-welch t-test	18.63941	4.749603	0.0001

The t-test shows that there is a significant difference between the average TRADE variables based on CODE categories. The high t-value (4.749603) and very low P-value (0.0001) indicate that the mean difference is highly statistically significant at the 1% significance level.

The Satterthwaite-Welch t-test also shows similar results to the ordinary t-test, taking into account unequal variances between groups. The results remain significant with a P-value of 0.0001.

The Welch F-test also takes into account unequal variances and shows similar results to the ANOVA F-test, with an F-value of 22.55872 and a P-value of 0.0001, confirming that the mean differences between groups are significant. All statistical tests carried out (t-test, Satterthwaite-Welch t-test, Anova F-test, and Welch F-test) showed consistent results.

The average difference of the TRADE variable based on CODE category is highly statistically significant. With a P-value of 0.0001, we can confidently state that there is a significant difference in TRADE means between the groups categorized by CODE.

Table 3 F-test and Welch F-test

Method	df	Value	Probability
Anova f-test	(1,20)	2.55872	0.0001
welch f-test	(1,18.6394)	2.55872	0.0001

The F-statistic value of 22.56 (in accordance with the previous Anova F-test results) is very significant, indicating that the variation between groups is much greater than the variation within groups.

With a df for Between Groups of 1 and a df for Within Groups of 20, and a very high F

value, we can conclude that the differences between the groups are statistically significant.

These results support previous results showing that there are significant differences in the mean of the TRADE variable between groups categorized by CODE.

Table 3 Average value trade

CODE	Count	Mean	Std. Dev	Of Mean
0	11	906.6364	315.6503	95.17214
1	11	339.4182	239.2673	72.14179
All	22	623.0273	398.7116	85.00560

Average value TRADE in the CODE = 0 category (906.6364) is much higher than in the CODE = 1 category (339.4182). The standard deviation in both categories shows variation, but the variation in the CODE = 0 category (315.6503) is greater than in the CODE = 1 category (239.2673).The standard error of the mean provides an idea of the precision of the average calculated from the sample, where the CODE = 1 category has a smaller standard error (72.14179) compared to the CODE = 0 category (95.17214), indicating a lower estimate of the mean. more precise for the CODE = 1 category.

These results are consistent with the previous analysis of variificant differences between the two groups (CODE = 0 and CODE = 1) in terms of values TRADE. Categories with CODE = 0 have a higher average trading value than categories with CODE = 1.ance results which showed sign

DISCUSSION

The analysis of Indonesia's coal export volume to China from 2000 to 2021 reveals substantial variability in annual export quantities. The average annual export volume was 623.0273 units, with a median of 600.8000 units. The highest recorded volume was 1483.400 units, and the lowest was 97.40000 units. This significant range indicates a broad fluctuation in export performance over the years. The standard deviation of 398.7116 units underscores this variability, highlighting the considerable spread of data around the mean.

The skewness value of 0.419287 indicates a slight positive skew in the data distribution. This suggests that while most export volumes are concentrated around the mean, there are several instances of exceptionally high export volumes, pulling the distribution's tail to the right. The relatively normal distribution, confirmed by the Jarque-Bera test, implies that despite some outliers, the data largely follow a bell-curve pattern, which is crucial for the validity of subsequent parametric tests.

The paired sample t-test, Satterthwaite-Welch t-test, and Welch F-test all indicate significant differences in the export volumes between the two groups categorized by the variable KODE. The high t-value (4.749603) and extremely low p-value (0.0001) from the t-test signify that the differences in average export volumes between the pre-ACFTA and post-ACFTA periods are statistically significant at the 1% level.

The Satterthwaite-Welch t-test, which accounts for unequal variances, corroborates these findings with a similar t-value and p-value, ensuring that the results are robust

against heteroscedasticity. The ANOVA and Welch F-tests further support this conclusion with significant F-values (22.55872) and very low p-values (0.0001), emphasizing that the variance between the groups is much greater than within the groups.

When examining the mean export volumes between the categories, KODE = 0 (pre-ACFTA) and KODE = 1 (post-ACFTA), the data reveals a notable difference. The average export volume in the pre-ACFTA period was 906.6364 units, significantly higher than the post-ACFTA period's 339.4182 units. This indicates a marked decline in export volumes following the implementation of ACFTA, despite the agreement's intention to facilitate trade.

The standard deviations for both categories further illustrate this trend. The pre-ACFTA period exhibits a larger standard deviation (315.6503) compared to the post-ACFTA period (239.2673), suggesting greater variability in export volumes before the trade agreement. The lower standard error of the mean for the post-ACFTA period (72.14179) compared to the pre-ACFTA period (95.17214) indicates a more precise estimate of the mean export volume in the latter period.

The results indicate that the implementation of ACFTA did not yield the anticipated increase in coal export volumes from Indonesia to China. In fact, there was a significant reduction in the average export volumes post-ACFTA. This finding challenges the assumption that free trade agreements inherently boost trade volumes and suggests the presence of other influencing factors.

Several external factors could have influenced these outcomes, such as increased competition from other coal-exporting countries, fluctuations in global coal prices, and China's energy policy shifts towards renewable sources. Further research should delve into these aspects to provide a more comprehensive understanding of the dynamics at play.

Future studies could expand the scope by including additional variables such as export prices, demand shifts in China, and competition from other countries. Extending the observation period and incorporating qualitative data through interviews with industry experts and policymakers could also enrich the analysis. Such comprehensive studies would offer more granular insights into the interplay between trade agreements and export performance, informing more effective policy decisions and strategic trade initiatives.

CONCLUSION

Based on the results of research statistical tests, ACFTA (ASEAN-China Free Trade Area) has a positive effect on Indonesian coal exports to China. This research offers various implications. First, the research contributes to the literature by providing evidence of the influence of ACFTA (ASEAN-China Free Trade Area) on Indonesian coal exports to China. The second implication is the results of the research. This illustrates that there are several factors that are thought to influence the trade balance, which may be influenced by exports and imports. Future research could be conducted on more countries and include additional variables, using different variables, theoretical frameworks, and extending the observation period to provide a more consistent basis for further research.

Free trade and globalization have accelerated the entry of imported products into Indonesia, especially through the ASEAN-China Free Trade Area (ACFTA) agreement. Indonesia ratified this agreement on June 15 2004, and ACFTA came into effect on January 1 2010, which facilitates and reduces the costs of importing products from

ASEAN and China.

China is Indonesia's largest importer and second largest export destination country. Although the value of Indonesian furniture exports peaked in 2021 at US$2.88 billion, this figure decreased slightly to US$2.81 billion in 2022, reflecting a decline of 2.72%. Most of Indonesia's exports consist of natural resources, both oil and gas and non-oil and gas.

The Indonesian government is committed to increasing international trade by developing ten main products such as shrimp, coffee, palm oil, cocoa and textiles. This strategy aims to strengthen Indonesia's position in the international market and maximize the benefits of free trade agreements such as ACFTA.

To improve the economy, Indonesia needs to develop high-tech and manufactured products, improve the quality of export products, and strengthen logistics infrastructure. Education and training that meets industry needs will create a skilled workforce. Establishing trade cooperation with various countries and diversifying export markets will reduce economic risks.

Product diversification and quality improvement will increase Indonesia's competitiveness and export volume. Investments in infrastructure and education will create jobs and increase people's incomes. Reducing dependence on certain products and markets will make the economy more stable. International cooperation and diversification of export markets will support sustainable economic growth and improve social welfare.

DECLARATION OF CONFLICTING INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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